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Quality of life in patients with multiple myeloma and malignant lymphoma undergoing autologous progenitor stem cell transplantation: The effect of selected psychosocial and health aspects on quality of life: A retrospective analysis

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Data Interpretation
E Manuscript Preparation
F Literature Search
G Funds Collection

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Summary

Background Quality of life (QoL) is defined as "a patient's subjective evaluation of his life situation". QoL evaluation is carried out by means of generic and specific questionnaires. Generic QoL questionnaires generally evaluate a patient's overall condition regardless of his disease. Specific QoL questionnaires are designed to evaluate a patient's overall condition for a particular type of disease.

Aim The study analyses the effect of selected psychosocial and health aspects on quality of life in patients with multiple myeloma and malignant lymphoma undergoing autologous progenitor stem cell transplantation.

Materials/Methods The total number of respondents undergoing transplantation between 2001 and 2003 was 56:32 respondents (18 male and 14 female) with multiple myeloma, and 24 respondents (11 male and 13 female) with malignant lymphoma. The average age of patients with multiple myeloma was 60 years and the average age of patients with malignant lymphoma was 44.5 years. The Czech version of the international generic European Quality of Life Questionnaire, Version EQ-5D, was used. The effect of selected psychosocial and health aspects (age, sex, level of education, marital status, number of associated diseases, smoking abuse, religion, type of disease and time since the transplantation) on quality of life in patients was determined by means of analysis of variance.

Results The above-mentioned aspects proved statistically significant dependence of quality of life on age, smoking abuse in patients with multiple myeloma and on type of disease. EQ-5D score (dimensions of quality of life) and EQ-5D VAS (subjective health condition) significantly decrease with increasing age in both groups

of patients and with smoking abuse in patients with multiple myeloma, and are significantly higher in patients with malignant lymphoma. The effect of other aspects on quality of life was not proven as statistically significant. The quality of life in patients with multiple myeloma undergoing autologous progenitor stem cell transplantation is at a lower level (mean EQ-5D score 68.9%, mean EQ-5D VAS 66.6%) than in patients with malignant lymphoma after the transplantation (mean EQ-5D score 82.7%, mean EQ-5D VAS 76.7%) at the Department of Clinical Haematology of the Department of Medicine of Charles University Hospital in Hradec Kralove, Czech Republic.

Conclusion The global quality of life in our patients with multiple myeloma and malignant lymphoma undergoing autologous progenitor stem cell transplantation is at a good level.

Key words **quality of life • autologous progenitor stem cell transplantation • multiple myeloma • malignant lymphoma**

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Background

Quality of life (QoL) is defined as "a patient's subjective evaluation of his life situation" [1–3]. The QoL term contains information on an individual's physical, psychological, social and spiritual condition [4,5]. QoL evaluation is carried out by means of generic and specific questionnaires [2,3]. Generic QoL questionnaires generally evaluate a patient's overall condition regardless of his disease. Specific QoL questionnaires are designed to evaluate a patient's overall condition for a particular type of disease. Modules are often used with these specific questionnaires. These modules are focused on specific symptoms and complaints in a particular type of disease [2,3].

Aims of Study

1. To analyse the effect of selected psychosocial and health aspects on QoL in patients with multiple myeloma and malignant lymphoma undergoing autologous PSCT at the Department of Clinical Haematology of the Department of Medicine of Charles University Hospital in Hradec Kralove, Czech Republic.
2. To evaluate global QoL in patients with multiple myeloma and malignant lymphoma undergoing autologous PSCT at the Department of Clinical Haematology of the Department of Medicine of Charles University Hospital in Hradec Kralove, Czech Republic.

Design of study

The study is cross-sectional and retrospective. It is based on data obtained during the year 2004 (from 1 September to 31 December) in 56 patients with multiple myeloma and malignant lymphoma undergoing autologous PSCT between 2001 and 2003. The study was approved by the Ethics Commission of the Charles University Hospital and Medical Faculty in Hradec Kralove, Czech Republic.

The study analyses the effect of selected psychosocial and health aspects on QoL in patients with multiple myeloma and malignant lymphoma undergoing autologous PSCT in the period of 2001–2003, some of the results of which have already been published [2]. We continued to analyse and compare the effect of selected aspects on QoL in patients with multiple myeloma and malignant lymphoma undergoing autologous PSCT.

Table 1. Number of respondents with multiple myeloma and malignant lymphoma undergoing autologous PSCT between 2001 and 2003.

Type of disease	Year 2001	Year 2002	Year 2003	Total number
Multiple Myeloma	10	8	14	32
Malignant Lymphoma	8	6	10	24

Materials and Methods

Group characteristics

The total number of patients with multiple myeloma and malignant lymphoma undergoing autologous PSCT at the Department of Clinical Haematology of the Department of Medicine of Charles University Hospital in Hradec Kralove, Czech Republic, between 2001 and 2003 was 122 (70 patients with multiple myeloma and 52 patients with malignant lymphoma). The total number of respondents was 80 (36 patients died and 6 patients underwent retransplantation). The return rate of questionnaires was 70% (56 respondents: 32 respondents (18 male and 14 female) with multiple myeloma and 24 respondents (11 male and 13 female) with malignant lymphoma) and we could evaluate 100% of them. The average age of patients with multiple myeloma was 60 years. The average age of patients with malignant lymphoma was 44.5 years. Table 1 shows the representation of respondents with multiple myeloma and malignant lymphoma undergoing autologous PSCT between 2001 and 2003.

Instrument

The Czech version of the international generic EuroQol EQ-5D Questionnaire was used in the study [2,6]. This questionnaire evaluates two indicators, objective and subjective. The objective indicator includes five dimensions of QoL: mobility, self-care, usual activities, pain/discomfort, anxiety/depression. Three kinds of answers which express the degree of complaints are offered for each question (no complaints, mild complaints, severe complaints). In total 243 (3^5) combinations of health condition exist. The outcome is the EQ-5D score (dimensions of QoL) having a value from 0 to 1 (0 – the worst health condition, 1 – the best health condition). The subjective indicator includes a visual analogous scale (a value of 100 – the best health condition, a value of 0 – the worst health condition). The respondent marks his subjectively perceived health condition on a 'thermometer' scale. The outcome is EQ-5D VAS (subjective health condition) which has values from 0 to 100.

A questionnaire with a covering letter, in which the whole project was explained, together with a stamped envelope were posted to the respondent's address.

Data analysis

The evaluation of questionnaires was carried out by means of descriptive analysis in accordance with the European Quality of Life Group Method [6]. The independent variables were age, sex, level of education, marital status, number of associated diseases, smoking abuse, religion and time since PSCT. The dependent variables were EQ-5D score (dimensions of QoL) and EQ-5D VAS (subjective health condition). The effect of selected aspects of QoL of patients was evaluated by means of analysis of variance (ANOVA). StatSoft STATISTICA Base 7.1 software was used for complete evaluation of dates. The value $p<0.05$ was considered significant.

Results

The above-mentioned aspects proved statistically significant dependence of EQ-5D score and EQ-5 VAS on age (in both cases $p<0.01$), statistically significant dependence of EQ-5D score and EQ-5 VAS on smoking abuse in patients with multiple myeloma (in both cases $p<0.05$) and statistically significant dependence of EQ-5D score and EQ-5 VAS on type of disease (in both cases $p<0.01$). EQ-5D score (dimensions of QoL) and EQ-5D VAS (subjective health condition) significantly decrease with increasing age in both groups of patients (Figures 1, 2). They are significantly higher in non-smokers in the multiple myeloma group (Figure 3). They are significantly higher in patients with malignant lymphoma (Figure 4, Table 2). The effect of other aspects on QoL (EQ-5D score and EQ-5D VAS) was not proven as statistically significant.

The global QoL in patients with multiple myeloma undergoing autologous PSCT is lower (mean

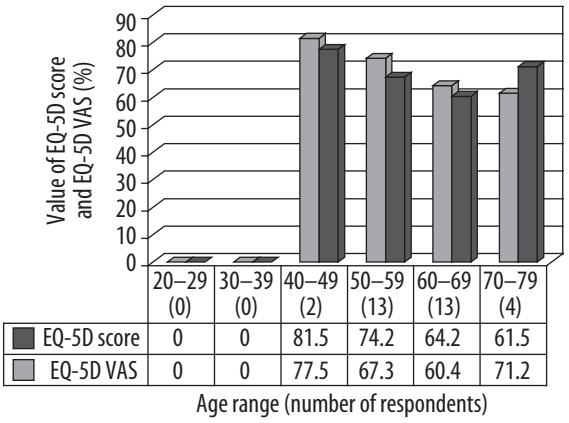

Figure 1. Dependence of EQ-5D score and EQ-5D VAS on individual age groups in patients with multiple myeloma undergoing autologous PSCT between 2001 and 2003 (n=32, p<0.01).

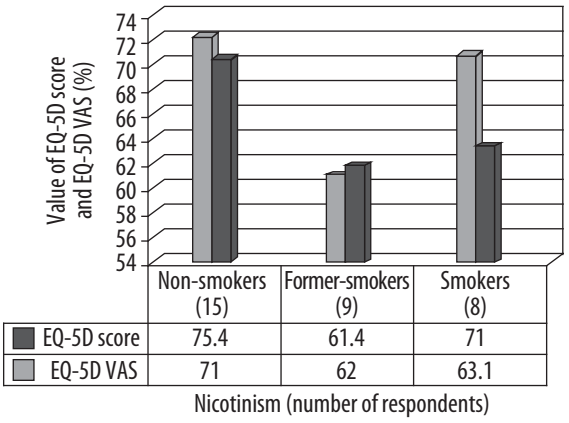

Figure 3. Dependence of EQ-5D score and EQ-5D VAS on smoking abuse in patients with multiple myeloma undergoing autologous PSCT between 2001 and 2003 (n=32, p<0.01).

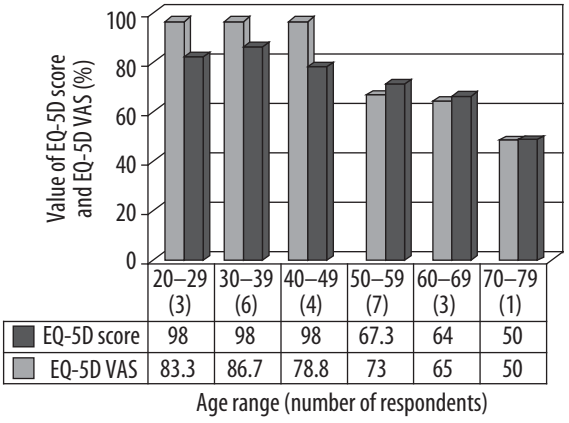

Figure 2. Dependence of EQ-5D score and EQ-5D VAS on individual age groups in patients with malignant lymphoma undergoing autologous PSCT between 2001 and 2003 (n=24, p<0.01).

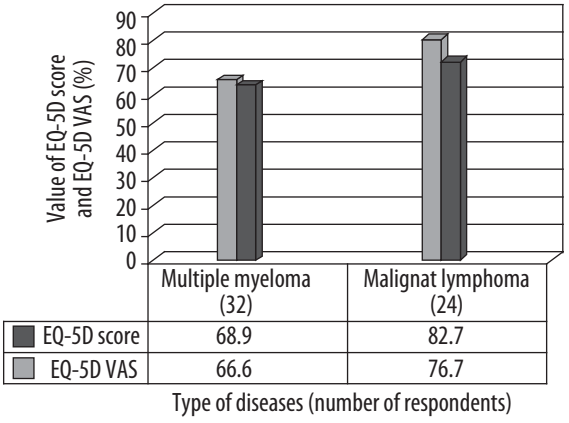

Figure 4. Dependence of EQ-5D score and EQ-5D VAS on type of disease in patients undergoing autologous PSCT between 2001 and 2003 (n=56, p<0.01).

EQ-5D score 68.9%, mean EQ-5D VAS 66.6%) than in patients with malignant lymphoma undergoing autologous PSCT (mean EQ-5D score 82.7%, mean EQ-5D VAS 76.7%).

Discussion

Three main outcomes follow from our study:

1. The effect of age on the global QoL in both patients groups undergoing autologous PSCT has been proved.

Our results show that a lower QoL correlates with increasing age of patients who underwent HSCT. De Souza [7], Heinonen [8,9], Chiodi [10], Wang [11], Wong [12], Andrykowski [13] and Zittoun [14] discovered a similar trend in their studies. De Souza [7] points out in his longitudinal study conducted in a group of 26 patients (13 patients who underwent BMT and 13 patients who underwent SCT) the fact that with increasing age a number of associated diseases can occur (polymorbidity) in both groups of these patients. These diseases reduce QoL. Choidi [10] also agrees with this opinion in his transversal study conducted in a group of 244 patients with haematological malignancies who underwent allogeneic BMT. He also points out the fact that in addition to polymorbidity and negative effect of chronic graft-versus-host disease (cGVHD) on a lower QoL in patients with increasing age should be stressed. Wang [11], Wong [12] and Andrykowski [13] also agree about the influence of cGVHD on lower QoL in patients with increasing age. Zittoun [14] discovered another

Table 2. Comparison of respondents with multiple myeloma and malignant lymphoma undergoing autologous PSCT according to the level of troubles and the type of disease.

Dimension of quality of life	Level of evaluation	Malignant lymphoma		Multiple myeloma	
Number of respondents		abs.	rel	abs.	rel.
Mobility	no troubles	17	70.8%	13	41%
	with troubles	7	29.2%	19	59%
	immobile	0		0	
Self-care	no troubles	22	91.7%	26	81.2%
	with troubles	2	8.3%	6	18.8%
	incapable	0		0	
Usual activities	no troubles	17	70.8%	6	18.8%
	with troubles	6	25.0%	26	81.2%
	incapable	1	4.2%	0	
Pain/discomfort	none	16	66.7%	9	28.1%
	substantial	8	33.3%	22	68.8%
	extreme	0		1	3.1%
Anxiety /depression	none	18	75.0%	13	41%
	substantial	5	20.8%	19	59%
	extreme	1	4.2%	0	
Number of respondents		24		32	

interesting piece of information in his transversal study conducted in a group of 179 patients with haematological malignancies who underwent HSCT. He points out that increasing overall fatigue and emotional complaints which decrease QoL correlate with increasing age. So [15] also discovered an interesting piece of information in his transversal study conducted in a group of 157 patients with haematological malignancies who underwent BMT. He proved a high degree of overall fatigue in patients over the age of 50 with associated diseases. Another author who agrees with Zittoun's [14] and So's [15] opinions is Saleh [16]. He conducted a transversal study in a group of 41 patients who underwent BMT. This author [16] points out that in patients with an increasing number of associated diseases there is a lower overall physical condition and this means lower QoL.

Kouroukise's pilot study of 2004 brought interesting information [17]. The group of respondents comprised 76 patients with non-Hodgkin's lymphoma. To test the respondents, the author produced a questionnaire on QoL which covered 6 domains of QoL, namely physical aspects, psychological aspects, social and economic aspects, toxicity and the whole appearance with a total of 29 questions. The author [17] compared two groups of patients, the first group with patients up to 65 years of age and the second one over 65 years of age, with no statistically significant effect of age on QoL in this group.

2. The effect of smoking abuse on global QoL in groups of patients with multiple myeloma undergoing autologous PSCT has been proved.

In the cohort of patients with multiple myeloma undergoing autologous PSCT we proved a lower global QoL in smokers in comparison with non-smokers or former smokers. Chang [18] found an opposite trend in his longitudinal follow-up of patients with chronic myeloid leukaemia undergoing allogeneic HSCT, in whom the effect of alcohol and smoking abuse on QoL was observed. The group consisted of 114 patients. The author did not prove in his study an effect of alcohol and smoking abuse on QoL in this group of patients [18]. Slovacek [2] did not prove an effect of smoking abuse on global QoL in patients undergoing HSCT in his cross-sectional

study conducted in a group of 71 patients undergoing HSCT.

3. The effect of type of disease on global QoL in patients undergoing autologous PSCT has been proved.

We confirmed in our cross-sectional follow-up a statistically significant dependence of global QoL in patients undergoing autologous PSCT on the type of disease. We found a lower global QoL in the cohort of patients with multiple myeloma undergoing autologous PSCT (EQ-5D score 68.9%, EQ-5D VAS 66.6%) in comparison with the cohort of patients with malignant lymphoma undergoing autologous PSCT (EQ-5D score 82.7%, EQ-5D VAS 76.7%). Prevailing complaints in the cohort of patients with multiple myeloma are: 1. regular activity with complaints 81.2% (26/32 respondents), 2. medium serious pain / discomfort 68.8% (22/32 respondents), 3. movement with complaints 59% (19/32 respondents), 4. medium serious anxiety / depression 59% (19/32 respondents). Prevailing complaints in the cohort of patients with malignant lymphoma are: 1. medium serious pain/discomfort 33.3% (8/24 respondents), 2. movement with complaints 29.2% (7/24 respondents), regular activity with complaints 25% (6/24 respondents), medium serious anxiety/depression 20.8% (5/24 respondents). Poulos [19] revealed a similar trend in his descriptive study of the year 2001 in a group of patients with multiple myeloma which comprised 346 patients. The author observed an effect of pain and mood disturbances on QoL in these patients. The study results prove that 29% of patients with multiple myeloma feel a pain of moderate to strong intensity. Furthermore, the study indicates a significant association between intensity of pain and mood disturbance. Moreover, tumour pain and mood disturbances are found to be significant predictors of QoL in this group of patients [19]. Holzner (20) compared in his cross-sectional study a group of 418 patients subdivided into groups according to type of oncological disease: 1st group, patients with Hodgkin's lymphoma; 2nd group, female patients with breast carcinoma; 3rd_group, patients with chronic lymphatic leukaemia. These patients were not treated with HSCT. Holzner [20] did not prove in his study significant differences in QoL according to the type of disease. Moreover, comparing both questionnaires, he did not confirm significant differences in evaluation of QoL [20]. Van Agthoven [21] compared QoL in his cross-sectional study of a group of 91 patients with non-Hodgkin's and Hodgkin's lymphoma treated with autologous BMT and autologous PSCT. The group of 91 patients was subdivided into three mixed groups. He confirmed in his study a lower QoL in patients with non-Hodgkin's lymphoma undergoing autologous PSCT or autologous BMT in comparison with patients with Hodgkin's lymphoma undergoing autologous PSCT or autologous BMT. Furthermore, the author did not prove differences in QoL between the groups in dependence on the type of transplantation (the same QoL in both groups of patients after autologous PSCT or BMT) [21]. Mounier [22] carried out a similar follow-up. In his cross-sectional study, he compared QoL in patients with non-Hodgkin's lymphoma treated with high-dose chemotherapy and consequently with autologous BMT and QoL in patients with non-Hodgkin's lymphoma treated with sequential chemotherapy. The group comprised 541 patients with non-Hodgkin's lymphoma in the first complete remission, which was divided into two subgroups of patients: 1. patients with non-Hodgkin's lymphoma treated with high-dose chemotherapy and autologous BMT, 2. patients with non-Hodgkin's lymphoma treated with sequential chemotherapy. The results of Mounier's study reveal a higher QoL in patients with non-Hodgkin's lymphoma treated with high-dose chemotherapy and autologous BMT compared with patients with non-Hodgkin's lymphoma treated with sequential chemotherapy [22].

Conclusions

It is common in clinical practice to evaluate a patient's health condition and the success of the treatment based only on one type of marker, most often by means of somatic, laboratory or detecting markers. But the trend in modern clinical medicine is to evaluate a patient's health condition in a more complex way, using other aspects. QoL means more dimensional evaluation of a number of life aspects. Different aspects can be affected in a different way in a different phase of the disease and its treatment. That is why this information enriches our knowledge concerning a patient's needs and it can significantly contribute to the improvement of medical treatment. It can also help us to reveal the mechanisms which modify the origin and the course of disease (23,24).

As is known, our study together with the study of the Czech Myeloma Society of the year 2002, which evaluated QoL and tolerance of sustained

therapy in patients with multiple myeloma, is one of several Czech studies dealing with QoL in haematooncological patients [24]. Our study reveals global QoL in patients with multiple myeloma and malignant lymphoma after autologous PSCT. In the future, we would like to continue this study and carry on a prospective study which would longitudinally evaluate health-related quality of life (HRQoL) and which would be more focussed on characteristics of particular diseases, on methods of pretransplantation procedure and on the type of transplantation.

We are also aware that our study may be limited by several other factors: 1. The study deals only with the effect of selected aspects on global QoL. We could add a few other aspects. But we decided on these aspects because patients were able and willing to provide this information in a retrospectively and anonymously carried out study. 2. In the study we used only generic Euro Qol EQ-5D for evaluation of global QoL in our patients. We decided on its evaluation because our patients were able and willing to complete only this questionnaire. Our patients emphasized that this questionnaire was very intelligible and especially brief. We could use the original Czech version of the FACT-G Questionnaire or the EORTC QLQ-C30 Questionnaire, but our patients were against completing one of these questionnaires. The patients emphasized that these questionnaires are very comprehensive and time-consuming. 3. There was a relatively small group of all our patients in both patient groups undergoing autologous PSCT. 4. There is little information about effect of selected aspects (especially religion, smoking abuse and level of education) on QoL in patients undergoing autologous PSCT in literature reviews for extensive discussion.

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